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EXAMINER	
MCCLOUD, RENATA D	

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 08/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/943,705	EL-SADI, ASHRAF	
	Examiner	Art Unit	
	Renata McCloud	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18 and 21-101* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18 and 21-101* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 12, lines 8-9, and on page 13 lines 12-15, reference number (224) is referred to as an integrator, while in on page 12 lines 21-22, and page 19 line18-19, (224) is referred to as a "compensator network" and as a "compensator". Appropriate correction is required.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "224" has been used to designate both integrator and compensator. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 40-41,52-54,85-87,91-96,99-101 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 40 recites the limitation "said bipolar switch". There is insufficient antecedent basis for this limitation in the claim.

Claims 52, 53,85,86,91,92 recite the limitation "said compensator". There is insufficient antecedent basis for this limitation in the claim.

Claims 61-63,99 recite the limitation "said compensating step". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 6-18, 21-26, 28, 64, and 67-73 are rejected under 35 U.S.C. 102(e) as being anticipated by Rosenberg (U.S. 6300937).

Claims 1,14, and 64: a driver having a current control device for a voice coil motor, used in a disk drive comprising a sensor (Fig. 2: R2) to sense a coil current in a voice coil motor (e.g. Col. 4:13-15); a transconductance amplifier (e.g. Fig. 2:54) to detect a current by comparing a coil current (current across R2) and a command current (e.g. Fig. 2:Vin) and means (Fig. 2:R,C,56) to integrate the error current into a coil current.

Claims 6 and 67: the means to integrate (Fig. 2: R,C,56) includes a capacitor (Fig. 2:C).

Claims 7 and 68: the means to integrate (Fig. 2: R,C,56) includes a resistor (Fig. R).

Claims 8 and 69: an amplifier (Fig. 2: 56) to supply a coil current, the amplifier coupled to the integration means (Fig. 2:R,C,56)

Claims 9 and 70: the sensor includes a sense resistor (Fig. 2:R2).

Claims 10,16, and 71: the command current is received at the driver (Fig. 2:38) from a microcontroller (Fig. 2:26)

Claims 11 and 72: the means to integrate (Fig. 2:R,C,56) includes a capacitor (Fig. 2: C) is connected to the transconductance amplifier (Fig. 2: 54).

Claim 12: the transconductance amplifier (Fig. 2: 54) has a first input (Fig. 2: the '-' input) and a second input (Fig. 2: the '+' input) such that the coil current (current from R2) is coupled to the first input of the amplifier, the command current is coupled to the second input of the amplifier wherein the amplifier detects the difference between the coil current and the command current (it is inherent that a transconductor takes the difference).

Claims 13 and 73: the means to integrate (Fig. 2:R, C,56) is coupled to a gain buffer (Fig. 2:R, the "R" to the left of 56, the resistance sets the gain of the amplifier).

Claim 15: an amplifier (Fig. 2: 56) to amplify the coil current.

Claim 17: The motor has a magnetic field (it is known in the art that a vcm has a bemf).

Claim 18: sensing a voltage and determining the coil current from the voltage (Col. 3:40-52).

Claim 21: comparing the coil current (Fig. 2: current from R2) and the command current (Vin) at the transconductance amplifier (Fig. 2:54).

Claim 22: compensating the error current by delaying the integrating step (Fig. 4:423 is a switch which if not closed, would cause a delay in the current from going to 404).

Claim 23: a current control device for a vcm driver, the vcm coupled to a microprocessor (Fig. 2:26), driver comprising an amplifier (Fig. 2: 54) and means (Fig. 2:R, C, 56) to integrate an error current with a command current to generate a coil current, wherein the error current is detected by comparing the command current and the coil current sensed with a sensor (Fig. 2:R2) coupled between the amplifier (Fig. 2: 54) and the vcm (Fig. 2: actuator).

Claim 24: a transconductance amplifier (Fig. 2: 54) to detect and calculate the error current by comparing the command current and the coil current (it is inherent that a transconductor takes the difference).

Claim 25: the error current correlates to a voltage across the sensor (Fig.2: R2).

Claim 26: the sensor is a resistor (Fig. 2:R2).

Claim 28: the amplifier (Fig. 2:56) is coupled to transistors (Fig. 3: 310, 312, 314, 320, 324, 322).

7. Claims 44-46, 48,49 are rejected under 35 U.S.C. 102(e) as being anticipated by Schalger (US 6600618).

Claim 44: a current control device comprising a coil current supplied to a vcm along a center tap (Fig. 1: center of 36,42,46,48); a comparator (Fig. 1:18) to shape a current command in accordance with the coil current, the command current driving a switch (Fig. 1:28,30).

Claim 45: an amplifier (Fig. 1: 22) to detect the coil current.

Claim 46: turning the transistors (Fig. 1: 36,42,46,48) on and off (col. 3:35-55).

Claim 48: a driver comprising a current sense amplifier (Fig. 1: 22) detecting a coil current in a vcm (Fig. 1: 31), the coil current is supplied by a center tap (center of 36,42,46,48); a current command (Fig. 1: vref); a comparator (Fig. 1: 18) coupled to the current sense amplifier (22) to receive the current command (Vref) and shape the command according the coil current (current from 22); a switch (28,30)coupled to the comparator (18) to turn on and off a set of transistors (36,42,46,48).

Claim 49: the transistors are MOSFETS (Fig. 1: 36,42,46,48).

8. Claims 50-52,57-59,61,63,84,85,90,97 are rejected under 35 U.S.C. 102(e) as being anticipated by Ng et al (US 6388413).

Claims 50, 58, 84, 97: a driver comprising a sensor (230) to sense a velocity voltage across a coil motor (col. 7:5055); an error amplifier (254) to calculate the difference between the velocity voltage and a command voltage; and a retract amplifier (238) to compensate the command voltage with the difference (Col.8:34-58).

Claims 51 and 59: a differential amplifier (242; col. 8:20-33) coupled to the error amplifier (254) to detect the velocity voltage across the sensor (230).

Claims 52, 61, 85: using a retract amplifier (238) for compensating.

Claims 57, 63, 90: the retract amplifier is turned on and off (8:34-58).

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1,12,14,23,28,64 rejected under 35 U.S.C. 102(b) as being anticipated by Jove et al (US 5270882).

Claims 1,14, 23,and 64: a driver having a current control device for a voice coil motor, used in a disk drive comprising a sensor (1:R1) to sense a coil current in a voice coil motor (Fig. 1:Rmr); a transconductance amplifier (Fig 1:g0) to detect an error current by comparing a coil current and a command current (col. 2:47-50) and means (Fig 1:C1) to integrate the error current into a coil current (col.2:40-53).

Claim 28: the amplifier is coupled to a set of transistors (Q1,Q2)

Claim 12: the transconductance amplifier (Fig 1:g0) has a first input and a second input such that the coil current (current from Rmr) is coupled to the first input of the amplifier, the command current (col 2:47-50) is coupled to the second input of the amplifier wherein the amplifier detects the difference between the coil current and the command current.

11. Claims 30,34-45,74,77-80 are rejected under 35 U.S.C. 102(b) as being anticipated by Salina et al (US6023143).

Claims 30 and 74: a driver comprising a set of transistors (Fig. 5:md1-4) coupled to a motor (vcm) by a center tap to supply a coil current, an amplifier (Fig. 5: sense amplifier) to detect the coil current, a comparator (Fig. 5:error amplifier) shaping a command current to a coil current; and a bipolar switch control (Fig. 5:pwm converter) to supply the command current to the transistors (col.4:8-33).

Claims 34 and 77: first and second transistors (Fig. 5:md1-4).

Claims 35 and 78: the transistors are MOSETS (Fig. 1:md1-4)

Claims 36 and 79: the switch control is turned on and off according to the command current waveform (Col. 4:8-33, pwm control).

Claims 37 and 80: a microcontroller (Fig. 5: DAC system/ 8 bit registers) supplies the command current (Col. 4:17-23).

Claim 38: supplying a coil current to a vcm (col.4:8-33); amplifying the current (Fig. 5: sense amplifier); and shaping a command current according to the coil current (Fig. 5:error amplifier).

Claim 39: receiving the command current at a switch control (Fig. 5:PWM converter).

Claim 40:saturating a set of transistors (Fig. 5:md1-4).

Claim 41: turning the transistors on and off (Fig. 5:pwm converter).

Claim 42: supplying the coil current to a center tap (Fig. 5: center of md1-4).

Claim 43: amplifying with a current sense amplifier (Fig. 5: sense amplifier)

Claim 44: a current control device comprising a coil current supplied to a vcm along a center tap (Fig. 5: center of md1-4); a comparator (Fig. 5:error amplifier) to shape a current command in accordance with the coil current, the command current driving a switch (Fig. 5:md1-4).

Claim 45: an amplifier (Fig. 5: sense amplifier) to detect the coil current.

12. Claims 30-34, 36-48,50-63,74-77,79-101 are rejected under 35 U.S.C. 102(b) as being anticipated by Taylor (US3936876).

Claims 30 and 74: a driver comprising a set of transistors (Fig. 26:T13, T14) coupled to a motor (Fig. 26:20) by a center tap to supply a coil current, a sense amplifier (Fig. 26:55) to detect the coil current (col. 9:51-10:5), a comparator (Fig. 9:25, Fig. 26:25) shaping a command

current to a coil current; and a bipolar switch control (Fig. 26: 59) to supply the command current to the transistors (col. 8:61-69).

Claim 31: first and second coils (Fig. 21:73,74).

Claim 32, 75: first and second coils having first and second currents (Fig. 21: 73,74; col. 4:60-64; col. 16:31-41).

Claim 33, 76: the coil current is the sum of the first and second currents (Fig. 21: 73 and 74 together form 20)

Claims 34 and 77: first and second transistors (Fig. 26:T13, T14).

Claims 36 and 79: the switch control is turned on and off according to the command current waveform (col. 8:61-69; Fig. 8).

Claims 37 and 80: a microcontroller (Fig. 30) supplies the command current.

Claim 38: supplying a coil current to a vcm (20); amplifying the current (Fig. 26:5); and shaping a command current according to the coil current (Fig. 26:59).

Claim 39: receiving the command current at a switch control (Fig. 26:59).

Claim 40:saturating a set of transistors (Fig. 26:T13,T14).

Claim 41: turning the transistors on and off (Col. 8:61-69; Fig. 8).

Claim 42: supplying the coil current to a center tap (Fig. 26: center of 20).

Claim 43: amplifying with a current sense amplifier (Fig. 26:55)

Claim 44: a current control device comprising a coil current supplied to a vcm (20) along a center tap (Fig. 26: center of 20); a comparator (Fig. 26:25) to shape a current command in accordance with the coil current, the command current driving a switch (T13, T14).

Claim 45: an amplifier (Fig. 26:55) to detect the coil current.

Claim 46: turning the transistors (T13, T14) on and off.

Claim 47: the center tap (Fig. 26: center of 20) supplies current to first and second coils (Fig. 21: 73, 74).

Claim 48: a driver comprising a set of transistors (Fig. 26:T13, T14) coupled to a motor (Fig. 26:20) by a center tap to supply a coil current, current command (col. 4:34-64); a comparator (Fig. 9:25, Fig. 26:25) shaping a command current to a coil current; and a bipolar switch control (Fig. 26: 59) to supply the command current to the transistors (col. 8:61-69).

Claims 50,58,84,91,97: a driver comprising a sensor (55) to sense a velocity voltage across a coil motor (col. 9:1-9); an error amplifier (fig. 25:81) to calculate the difference between the velocity voltage and a command voltage (col. 17:3-42); and a retract amplifier (fig. 21:185) to compensate the command voltage with the difference (Col. 17:3-42).

Claims 51 and 59: a differential amplifier (fig:26:145, fig 21:25) coupled to the error amplifier (81) to detect the velocity voltage across the sensor (55).

Claims 52,61,85,99: using a retract amplifier (185) for compensating.

Claims 57, 63,90,96, 101: the retract amplifier (185) is turned on and off.

Claims 53, 86, 92: the retract amp (Fig. 21:185) receives a command voltage form a compensator (25).

Claims 54, 62, 87, 93, 100: a set of transistors (Fig. 21: 26) coupled to the retract amp (Fig. 21:185).

Claims 55, 88,94: a first coil (Fig. 21: 73)

Claims 56, 89,95: a second coil (Fig. 21: 74)

Claim 60, 98: applying current to a first coil (Fig. 21: 73)

Claim 61: applying current to a second coil (Fig. 21: 74)

Claim 81: a current control device comprising a coil current supplied to a vcm (20) along a center tap (Fig. 26: center of 20) supplying first and second coils (Fig. 21: 73,74) with

current; a comparator (Fig. 26:25) to shape a current command in accordance with the coil current, the command current driving a switch (T10, T11).

Claim 82: an amplifier (Fig. 26:55) to detect the coil current

Claim 83: first and second transistors (Fig. 26:T13, T14) turned on and off to supply current to the center tap (Fig. 26:center of 20).

13. Claims 38, 42, 43, 50, 55- 58, 61, and 63 are rejected under 35 U.S.C. 102(b) as being anticipated by Hassan et al (U.s. 5, 821,717).

Claim 38: Hassan et al teach a method comprising supplying a coil current to a vcm, amplifying the coil current, and shaping a command current according to the coil current (Col. 3:5-37).

Claim 42: supplying a coil current to a center tap coupling the voice coil to the driver (Col. 3: 39-67).

Claim 43: amplifying the coil current with a current sense amplifier (Col. 3: 10-19).

Claims 50 and 58: Hassan et al teach a driver and a method for controlling a voice coil motor having a first coil motor and a second coil motor (e.g. Figure 2:300) comprising a sensor to sense a velocity voltage across a coil motor (e.g. Fig. 2: 310) an error amplifier to calculate a differential between a velocity voltage and a command voltage (e.g. Column 3, Lines 20-37) and a retract amplifier to compensate a command voltage with a differential (e.g. Figure 2, Item 113, Column 5, Lines 37-67).

Claims 57 and 63: the retract amplifier being turned on and off (e.g. Column 5, Lines 37- 67).

Claim 61: the retract amplifier coupled to the voice coil motor (e.g. Figure 2, Item 131 connected to 300).

Claims 55 and 56: a coil motor comprising a coil winding (Fig. 2:300).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg as applied to claim 1 above, in view of Ratliff et al (U.S. Patent 6,088,185).

Claim 2: Rosenberg teaches the limitations of claim 1. Referring to claim 2, they do not teach a force couple created by the current in the VCM and first and second coils oppositely polarized to induce a magnetic field. Ratliff et al teach a force couple created by the current in the VCM first and second coil motors oppositely polarized to induce a magnetic field (e.g. Col. 4: 44-5:15).

It would have been obvious to one having ordinary skill in the art at the time that the invention was made to modify the apparatus taught by Hassan et al to have a force couple and coils as taught by Ratliff et al. The advantage of this would be the ability to sense rotational vibration in the VCM.

16. Claims 2, 4,5,65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg as applied to claim 1 above, in view of Harwood et al (US 5491394)

Claim 2: Rosenberg teaches the limitations of claim 1. Referring to claim 2, they do not teach a force couple created by the current in the VCM and first and second coils oppositely

polarized to induce a magnetic field. Harwood et al teach a force couple created by the current in the VCM first and second coil motors oppositely polarized to induce a magnetic field (e.g. Col. 3: 6-18).

It would have been obvious to one having ordinary skill in the art at the time that the invention was made to modify the apparatus taught by Hassan et al to have a force couple and coils as taught by Harwood et al. The advantage of this would be the ability to sense rotational vibration in the VCM.

Claim 4: Rosenberg teaches the limitations of claim 1. Referring to claim 4, they do not teach first and second coils energized to retract a head positioner. Harwood et al teach first and second coil motors energized to move a head positioner (e.g. Col. 1:11-20; 3:63-4: 10).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the driver taught by Hassan et al to include first and second coils energized to retract a head positioner as taught by Harwood et al. The advantage of this would be the ability to prevent writing to the disk when there is shock.

Claim 5: Rosenberg and Harwood et al teach the limitations of 4. Referring to claim 5, Harwood et al teach the first and second coil motors are arranged such that current flows through both motors (Col. 3:63-4:10; Col. 4: 65-5:3).

17. Claims 3, 27, 29, and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenberg in view of Hassan et al (U.S. 5,821,717).

Claims 3 and 66: Rosenberg teaches the limitations of claims 1 and 64. Referring to claims 3 and 66, they do not teach a current sense amplifier coupled to a transconductance

amplifier. Hassan et al '717 teaches a current sense amplifier (Fig. 2: 114) coupled to a transconductance amplifier (Fig. 2: 128).

It would have been obvious to one having ordinary skill in the art at the time that the invention was made to modify the apparatus taught by Rosenberg, to couple a current sense amplifier to a transconductance amplifier as taught by Hassan et al '717. The advantage of this would be the ability to produce a signal proportional to the actual current passing through the vcm due to the amplifier sensing and amplifying the voltage drop across the sense resistor.

Claim 27: Rosenberg teaches the limitations of claim 23. Referring to claim 27, they do not teach a current sense amplifier coupled between the sensor and a compensator. Hassan et al '717 teach a current sense amplifier (Fig. 2: 114) coupled between a sensor (Fig. 2: 310) and an error amplifier (Fig. 2: 112).

It would have been obvious to one having ordinary skill in the art at the time that the invention was made to modify the apparatus taught by Rosenberg to couple a current sense amplifier to a transconductance amplifier as taught by Hassan et al '717. The advantage of this would be the ability to produce a signal proportional to the actual current passing through the vcm due to the amplifier sensing and amplifying the voltage drop across the sense resistor.

Claim 29: Rosenberg teaches a driver having a current control device for a vcm comprising an amplifier (Fig. 2: 56) to drive the vcm with a coil current, the coil current flows form one terminal of the vcm to another terminal, both terminals(fig. 2:actuator) are coupled to the driver (Fig. 2:38); a sensor (Fig. 2:R2) to sense the vcm coil current, the sensor coupled between the amplifier (Fig. 2: 56) and the vcm (Fig. 2: actuator); a transconductance amplifier (Fig. 2: 54) calculates an error current by comparing the sense current with the command current (inherent) and means (Fig. 2:R,C,56) to integrate an error current into a command

current to determine the coil current. Rosenberg does not teach a current sense amplifier coupled to the transconductance amplifier.

Hassan et al '717 teaches a current sense amplifier (Fig. 2: 114) to the amplify a voltage across the sensor (Fig. 2: 310), wherein the voltage correlates to the coil current (Col. 3: 16-19); a transconductance amplifier (Fig. 2: 128) coupled to the current sense amplifier (Fig. 2: 114) to receive the voltage and a command current, the transconductance amplifier calculates an error current by comparing the sense current with the command current (Col. 5: 23-36).

It would have been obvious to one having ordinary skill in the art at the time that the invention was made to modify the apparatus taught by Rosenberg to couple a current sense amplifier to a transconductance amplifier as taught by Hassan et al '717. The advantage of this would be the ability to produce a signal proportional to the actual current passing through the vcm due to the amplifier sensing and amplifying the voltage drop across the sense resistor.

Response to Arguments

18. Applicant's arguments filed 09 May 2005 with respect to claims 38, 42, 43, 50, 55-58, 61, and 63, have been fully considered but they are not persuasive.

In response to applicant's argument that Hassan (US 5821717) do not teach the claimed limitations, Hassan et al teach supplying a current to the VCM, amplifying the current and shaping a target current based on the coil current (Col. 3:5-37). Referring to Fig. 2, a target current is produced from a coil current is sensed at (114), passed to error amplifier (112), compared to the filtered command current from (111). Although Hassan et al also bases the target current on a command current produced by (10), Hassan et al still derive a target current based on the coil current.

Applicant's arguments with respect to the remainder of the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (571) 272-2069. The examiner can normally be reached on Mon.- Fri. from 8 am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (571) 272-2800 ext. 4. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Renata McCloud
Examiner
Art Unit 2837

MARLON T. FLETCHER
PRIMARY EXAMINER